

January 30, 2006

**MEMORANDUM**

**TO:** Mr. Steve Murray, P.L.S. - Tippecanoe County Surveyor

**FROM:** David W. Eichelberger, P.E. - CBBEL, Indianapolis

**PROJECT:** **Battle Ground Middle School  
CBBEL Project No. 02-038 (EM)**

**DEVELOPER/OWNER:** **Tippecanoe School Corporation**

**LOCATION:** **40° 30' 22" Latitude  
-86° 55' 07" Longitude**

**RECOMMENDATION:** **Final Approval with Conditions**

The Tippecanoe School Corporation will develop 50 acres of land located on the northwest corner of County Roads 50 West and 600 North as a new middle school. Currently, the site is vegetated with row crops, grasses, and some trees and includes a barn-type structure to be removed. Approximately 1/3 of the property drains to the east through culvert pipes at C. R. 50 West and eventually discharges to Burnett Creek within an existing swale along the north side of C. R. 600 North. The majority of the site drains south to an existing 24-inch diameter culvert at C. R. 600 North via a natural depression. The Fred Hafner Regulated Drain flows through the middle of the site, as a closed tile system. Additionally, significant off-site watersheds north and west of the project site (approximately 400 acres) contribute to the runoff entering the regulated drain system. The 24-inch diameter culvert restricts the amount of stormwater that can be released downstream, creating a large on-site depressional storage area.

Under proposed conditions, the developed school property will contain four (4) interconnected dry-bottom stormwater detention ponds. The southeast pond will discharge to the east, and the other three ponds will drain to the south. The ponds draining to the south will be controlled by a proposed 3-foot by 6-foot box culvert. A 60-inch diameter concrete outfall pipe will extend from the box culvert to the open ditch portion of the Fred Hafner Regulated Drain, approximately 550 feet downstream.

A berm will be constructed along the western boundary of the school property to maintain the depressional storage immediately off-site to the west. Five 24-inch pipes will be installed in the berm to allow off-site water to be conveyed to the on-site south pond. Future development plans west of the school involve residential housing and the construction of two stormwater detention ponds to accommodate the large watersheds north and west of the school property. The south school pond will be part of a shared pond system which will cross property lines and incorporate wet-bottom and dry-bottom design elements unique to each site.

The proposed project will have a direct outlet to the Fred Hafner Regulated Drain, which traverses the site. It appears that the regulated drain easement will be relocated through the school property. There appear to be two proposed crossings of the new regulated drain easement. The project site is within the Tippecanoe County MS4 Area.

This project has been addressed in meetings held on August 24, 2005, December 8, 2005, January 3, 2006, and January 24, 2006, and addressed in an e-mail of the January 3, 2006 meeting minutes, dated January 5, 2005. This project also was previously reviewed in a memorandum dated January 6, 2006. After a review of the most recently provided information, CBBEL recommends final approval of the stormwater management plan with the following conditions:

1. The applicant must request a variance from the allowable release rate requirements of the Tippecanoe County Stormwater Management Ordinance (Ordinance). The proposed project will increase peak discharges downstream of the existing tile headwall. In consideration of this variance request, the applicant will complete downstream ditch improvements and maintenance activities to provide adequate channel capacity.
2. The applicant must provide construction plans and design calculations for all proposed downstream improvements and channel maintenance activities.
3. The outlets for Ponds A, B, and D will be sensitive to clogging from on-site debris and debris from the fields north and west of the site. The applicant is requesting a variance from the Standards that require safety screens with 4" openings over the pond pipes. The applicant is proposing a trash rack that will not meet the 4" opening requirement. Due to the pond outlets' sensitivity to clogging, it is recommended that the variance request be approved.
4. The construction plans must include the proposed pond outlet trash racks, with details.
5. The applicant should provide a barrier to catch debris from fields to the north of the project site. The barrier should be designed to catch debris, yet allow free passage of stormwater runoff.
6. The applicant is requesting a variance from the post-construction stormwater quality measures for a portion of the proposed site. Currently, 15 acres of the 50 acre site will receive only 72% TSS removal instead of the required 80% TSS removal. The remainder of the site (approximately 35 acres) will achieve the 80% TSS removal goal. The applicant is investigating additional measures for this area to increase the amount of treatment provided.
7. The construction plans must include the location and details of any additional post-construction BMP measure provided for developed-condition Drainage Area D in order to meet the water quality provisions of the Ordinance. The drainage report must include any design calculations. Any additional BMP measure must meet the design criteria included in the appendices of the Standards.

8. The applicant must provide details for the proposed post-construction stormwater quality BMP measure associated with the east pond. In addition, calculations to clearly confirm that the 2 dry ponds will provide the required water quality volume below the proposed berm elevations should be included in the drainage report.
9. The applicant must provide an updated and separately bound Operations and Maintenance (O&M) Manual that includes: a) provisions for cleaning/maintaining the pond outlet trash racks and the debris barrier to the north, b) the east pond post-construction BMP measure, and c) the additional Drainage Area D post-construction BMP measure.
10. The applicant must revise the construction plans to include the proposed open grate on top of the manhole structure for the Pond D outlet. Details of this structure should be included in the construction plans.
11. The applicant must revise the grading plans to better illustrate the proposed pond stormwater quality berms. A detail for each pond berm should be provided as well. Moreover, the pipe material and invert elevations of the five (5) proposed 24-inch pipes at the west berm must be indicated on the grading plans.
12. The applicant should clearly label the proposed Fred Hafner Regulated Drain easement relocation on the plans. The applicant must coordinate the relocation of the Fred Hafner Regulated Drain with the Tippecanoe County Surveyor's Office (TCSO). Dedicated drainage easements and/or covenants and agreements regarding BMP and drainage maintenance, in a form acceptable to the TCSO and the Drainage Board, must be provided. This relocation will also require final approval from the Tippecanoe County Drainage Board.
13. The applicant should notify the property owners downstream of both outlet points in accordance with Chapter 3, Section 2. C. of the Ordinance. Notification for properties to the south should include all downstream properties to Cole Ditch.
14. The project plans should also note the acreage of the site that discharges to the Fred Hafner Regulated Drain in the existing condition and the acreage and amount of road right-of-way that will discharge to the Fred Hafner Regulated Drain in the developed condition.
15. As per Chapter 6, Section C.6. of the Standards, safety screens having a maximum opening of four (4) inches shall be provided for any pipe or opening to prevent children or large animals from crawling into the structures, except for the Pond A, B, and D outlets.
16. The applicant should still obtain approval from the Tippecanoe County Highway Department for all work proposed within future right-of-way areas and for all work within the County Road 600 North and 50 West Rights-of-Way. A portion of the southeast pond appears to encroach into the C. R. 50 West right-of-way.

17. The applicant should provide additional information to confirm that the proposed detention facilities will be separated from any road right-of-way by no less than one right-of-way width, measured from the top of bank or 100-year pool, as per Chapter 6, Section C.4. of the Standards.
18. The applicant must provide a complete set of certified construction plans and a final drainage report that includes all revisions.
19. The applicant must present the project at the Tippecanoe County Drainage Board meeting for the project to be considered for approval.
20. The applicant must pay any final drainage review fees per Ordinance 2005-04-CM and submit a letter to the County Surveyor's Office stating that these fees will be paid.
21. The applicant must pay the Phase II stormwater program fees.
22. All listed issues must be completely addressed before final plan approval and sign-off will be granted by the County Surveyor's Office.

No error or omission in the plans, calculations or applications (whether said plans, calculations or applications have been reviewed by the review engineer or not) shall permit or release the applicant and designer from constructing this work in any other manner than that provided for in the County Ordinance.

pc: TBIRD Design Services Corporation

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